

WEST INDIAN WASPS OF THE SUBFAMILIES EPYRINAE  
AND BETHYLINAE

(HYMENOPTERA: BETHYLIDAE)

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ABSTRACT—This paper is based on recently collected material from the U. S. Virgin Islands, Jamaica, and Cuba. In the Epyrinae, the genera *Rhabdepyris* and *Bakeriella* are reported from the West Indies for the first time, and new records are presented for species of *Anisepyris*, *Epyris*, and *Holepyris*. One new species is described in *Rhabdepyris* and one in *Holepyris*, while several new sex associations are reported in the other genera of this subfamily. In the Bethylinae, four new species are described, two in *Parasierola* and two in *Goniozus*; new records are presented for several other species. Twelve genera and 70 species of Bethylidae are now known from the West Indies.

In my 1964 Synopsis of the American Bethylidae, I recorded 33 species of Bethylidae representing 10 genera from the West Indies (exclusive of Trinidad). As a result of further studies (Evans, 1969a, b, and the present paper) the number of genera now stands at 12, the number of species at 70. It is probable that not many more genera will be recorded from these islands, but the number of species may be much higher than now appreciated. Most Pristocerinae appear confined to one or a few closely grouped islands, but some of the Epyrinae and Bethylinae are widely distributed. The West Indian Epyrinae are especially notable for their large size and brilliant color patterns, and unusual color patterns also occur in the Pristocerinae and Bethylinae. Most of the Antillean Bethylidae of all three subfamilies appear to show closest relationships to the fauna of Mexico and Central America, although it must be admitted that the South American fauna is still so imperfectly known that any relationships might remain undetected.

The present paper is based in considerable part on two recent trips I made to the U. S. Virgin Islands, which had previously been virtually uncollected for these insects. I have also made use of recently collected Cuban material sent to me by Pastor Alayo D. of Habana and of several specimens taken by H. F. Howden and E. C. Becker in Jamaica. The major discoveries in this material are as follows: (1) the genera *Rhabdepyris* and *Bakeriella* are reported from the West Indies for the first time; (2) two species of *Anisepyris* which had not been recovered since first described many years ago are reported from both sexes; and (3) several species of Bethylinae are shown to occur widely in the West Indies. Since some members of this subfamily attack Lepidoptera of considerable economic importance, their distribution is of more than academic interest.

Our present knowledge of West Indian Bethyliidae is more indicative of the intensity of collecting on various islands than of the actual richness of the fauna. It is to be hoped that further collections will be made on all islands, but especially on poorly sampled islands such as Hispaniola and Puerto Rico as well as on many of the Lesser Antilles. The present number of genera and species recorded per island is as follows (excluding several islands from which one species only has been recorded):

	<i>Genera</i>	<i>Species</i>
Cuba	10	27
Jamaica	7	18
Hispaniola	5	8
Puerto Rico	3	4
St. Croix	4	5
St. Thomas	3	3
St. John	5	6
Antigua	2	2
Dominica	7	19
St. Vincent	6	11
Grenada	3	5

The material covered in this paper is in the collections of the following four institutions, which are abbreviated in the text as indicated:

- ACC: Academia de Ciencias de Cuba, Habana  
 CNC: Canadian National Collections, Ottawa  
 MCZ: Museum of Comparative Zoology, Cambridge  
 USNM: United States National Museum, Washington

Abbreviations of body parts are the same as in my Synopsis, but they are repeated here for the sake of convenience:

- DAO: diameter of anterior ocellus  
 HE: height of eye (lateral view)  
 LFW: length of fore wing  
 LH: length of head (apical margin of clypeus to median vertex crest)  
 OOL: ocello-ocular line (minimum distance, eye to lateral ocellus)  
 WF: width of front (minimum)  
 WH: width of head (maximum, including eyes)  
 WOT: width of ocellar triangle (including lateral ocelli)

Subfamily EPYRINAE

Genus *Rhabdepyris* Kieffer

In my revision of this genus (Evans, 1965) I reported no species whatever from the West Indies. It was with considerable surprise that

I collected a member of this genus on St. Croix, U. S. Virgin Islands. It is one of the most brilliantly colored Bethyliidae known, although a member of a subgenus in which all the other known American species are black. One assumes that the genus will be found to occur elsewhere in the Antilles.

**Rhabdepyris (Rhabdepyris) versicolor**, n. sp.

(Fig. 1)

*Holotype*.—♀, ST. CROIX: East Point, 13–17 Feb. 1967 (H. Evans) [MCZ].

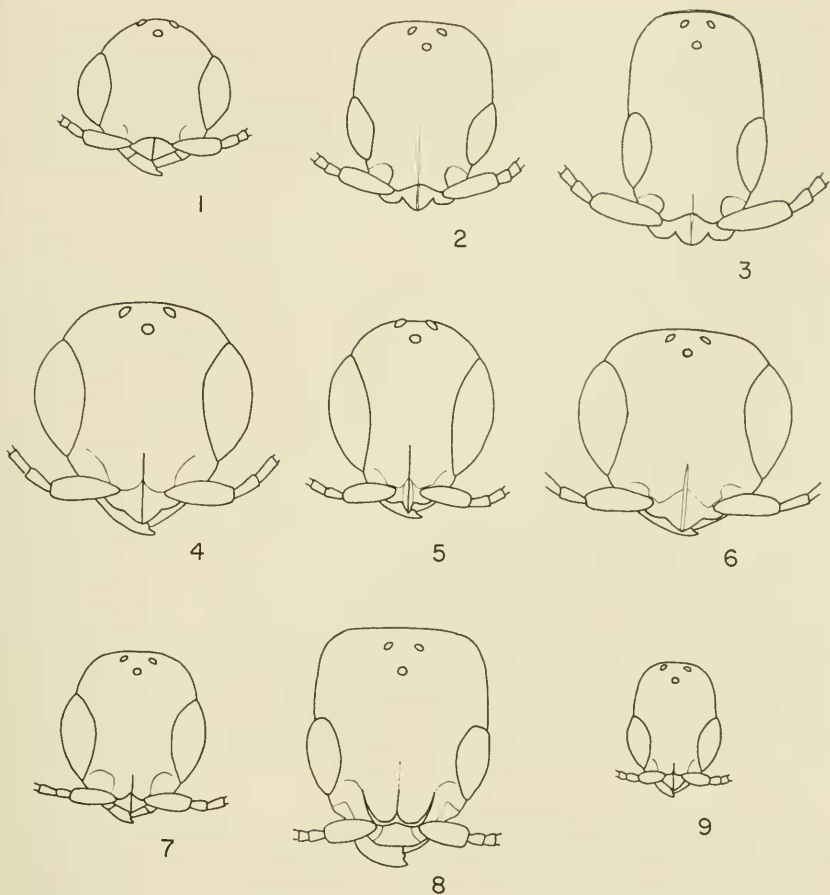
*Description of type*.—Length 2.1 mm.; LFW 1.4 mm. Head blue-violet; thorax emerald green, with bluish tints especially on sides of pronotum; propodeum olive green both dorsally and laterally; abdomen piceous; mandibles and scape testaceous, flagellum ferruginous; legs testaceous except outer side of front femur with a large black spot with blue-green reflections; wings hyaline, veins testaceous. Mandibles only slightly longer than distance from their base to bottoms of eyes; clypeus sharply, obtusely angulate, with a median ridge which is sinuate in profile. First four antennal segments in a ratio of about 9:3:2:3; outer flagellar segments (except last) wider than long. WH  $1.05 \times$  LH; WF  $1.15 \times$  HE; ocelli small, front angle of triangle slightly less than a right angle, OOL and WOT subequal. Front and thoracic dorsum wholly alutaceous but strongly shining, obscurely punctate. Pronotum with smooth contours, with a groove paralleling the posterior margin, but this groove obsolescent medially; notauli linear, complete, strongly diverging anteriorly; scutellar groove slightly widened at each end. Propodeal disc  $1.2 \times$  as wide as long, tricarinate and with two additional short carinae laterad of the major carinae, surface elsewhere irregularly transversely striate. Front femora slender,  $2.7 \times$  as long as wide.

Genus **Anisepyrus** Kieffer

This genus is abundantly represented in the West Indies, most of the species being large and brilliantly colored. On the basis of material recently received, I am able to make three additions to my recent revision of this genus (Evans, 1966a): (1) *planiceps* Fabricius, a species "lost" since 1804, has been rediscovered, the male newly discovered, (2) the male of *aureus* Kieffer is described for the first time, and (3) *rufitarsis* Kieffer is redescribed from both sexes (it was previously listed as unrecognized). The last species proves to belong to the *Columbianus* Species-group and represents the first record of that group from the West Indies.

**Anisepyrus aureus** Kieffer

This species was described from Habana, Cuba, and has been known only from females from Habana Province. The following records are new: CUBA: 1 ♀, Laguna Ariguanibo, Habana, May; 1 ♂, Santiago de las Vegas, Habana, Apr. (Alayo); 1 ♀, Pica Pica, Pinar del Rio,



Figs. 1-9. Heads of female Bethyilidae, drawn to same scale: 1, *Rhabdepyris versicolor*, n. sp., holotype; 2, *Holepyris incertus* (Ashmead), East Point, St. Croix; 3, *H. vison*, n. sp., holotype; 4, *Parasierola luteipes* Kieffer, Santiago de las Vegas, Cuba; 5, *P. ciliata*, n. sp., holotype; 6, *P. spilogaster*, n. sp., holotype; 7, *Goniozus alayoellus*, n. sp., holotype; 8, *G. megacephalus* Ashmead, Laguna Ariguanabo, Cuba; 9, *G. virginalis* n. sp., holotype.

June (Albañir); 1 ♀, C. Montero, Cruces, Las Villas, Dec. (Alayo); 1 ♂, S. Vicente, Viñales, Pinar del Rio, May; 1 ♀, 1 ♂, Tortugilla, Oriente, June [all ACC].

*Description of male.*—Length 3.2 mm.; LFW 2.6 mm. Head and thorax bright green, with weak coppery tints; propodeum blue; abdomen piceous; mandibles testaceous, the teeth rufous; antennae wholly medium brown; legs testaceous except front coxae infuscated; wings subhyaline. Mandibles with 5 sharp teeth; clypeus obtusely angulate; antennal scrobes weakly carinate, the ridges weak and

extending only half the distance to the eyes. Antennae elongate, segments 3 + 4 and segment eleven each about  $3 \times$  as long as wide. WH  $1.10 \times$  LH; WF  $1.15 \times$  HE; ocelli not notably enlarged, OOL  $.82 \times$  WOT. Front moderately alutaceous, with strong, close punctures; thoracic dorsum slightly less strongly alutaceous and much more weakly punctate. Pronotal disc rather flat, strongly margined by carinae anteriorly and laterally, posterior margin paralleled by a strong groove. Propodeal disc  $1.4 \times$  as wide as long, 5-carinate, the posterior angles not foveolate.

*Remarks.*—This description is based on the male from S. Vicente, Pinar del Rio. The other two males are similar, LFW varying from 2.5 to 3.2 mm., color of the flagellum from dull ferruginous to brown, OOL from .70 to .95  $\times$  WOT. The male from Tortugilla, Oriente, has the head somewhat distorted and asymmetrical. The male differs from that of *aurichalceus* in the following features: antennal scrobes weakly yet distinctly carinate; front narrower; propodeal disc slightly more elongate; pronotal disc flatter and with sharp, complete lateral carinae.

#### *Anisepyris planiceps* (Fabricius)

I redescribed the type of this species in my 1966 revision and speculated that it might have come from St. Croix (it was described from "Americae insulis"). On Feb. 10, 1969, I collected two females and three males on an acacia tree at Coral Harbor, ST. JOHN, U. S. Virgin Islands. The females resemble the type closely but one is smaller (length 6–7 mm., LFW 3.6–4.5 mm.). The males run out to *aurichalceus* in my 1966 key, but have slightly larger ocelli, a more alutaceous and less polished front, darker and more slender antennae, and much darker legs.

*Description of male.*—Length 5.5 mm.; LFW 3.7 mm. Head, thorax, and propodeum bright metallic green, with bluish tints; abdomen fuscous; mandibles ferruginous apically; antennae fuscous; coxae and femora dark brown, tibiae and tarsi light brown; wings subhyaline. Mandibles with 5 sharp teeth; clypeus angulate; scrobes not at all margined; antennae segments 3 + 4 and 11 each about  $4 \times$  as long as wide. WH  $1.12 \times$  LH; WF  $1.22 \times$  HE; OOL  $.85 \times$  WOT; ocelli slightly enlarged, DAO  $.16 \times$  WF. Front alutaceous, moderately shining, with large punctures. Thoracic dorsum shining, somewhat alutaceous, sparsely punctate; pronotal disc convex, margined anteriorly and laterally, and with a strong groove paralleling the posterior margin. Propodeal disc  $1.4 \times$  as wide as long, 5-carinate and with the posterior angles non-foveolate.

*Remarks.*—This description is based on the largest of the three males; the other two have the fore wings 3.0–3.5 mm. long but differ in no important details.

#### *Anisepyris rufitarsis* Kieffer

This species was described from a male from Habana, Cuba, and has remained unrecognized. Dr. Alayo has sent me two males which agree very well with Kieffer's description as well as two females which



undoubtedly represent the opposite sex. The data on the specimens are as follows: CUBA: 1 ♀, 2 ♂♂, Laguna Ariguanabo, Habana, May 1967 (no collector stated); 1 ♀, Siboney, Oriente, May 1950 (P. Alayo) [ACC, MCZ]. A male and female from Laguna Ariguanabo I have designated plesiotype and plesiallotype.

*Description of plesiallotype female.*—Length 3.5 mm.; LFW 2.0 mm. Black; front and thoracic dorsum with weak coppery reflections; mandibles and antennae rufo-testaceous; legs dark brown except tarsi testaceous; fore wings tinged with brown except for a hyaline streak below stigma, thus broadly twice-banded. Third and eleventh antennal segments slightly wider than long. Antennal scrobes strongly carinate. WH = LH; WF 1.17 × HE; OOL 1.05 × WOT. Front rather dull, strongly alutaceous, punctures small, separated by 3–4 × their own diameters. Thoracic dorsum moderately alutaceous, more shining than front, obscurely punctate; pronotal disc convex, strongly margined anteriorly and laterally and posterior margin paralleled by a deep groove. Propodeal disc 1.3 × as wide as long, 5-carinate, sides finely striolate. Lower mesopleural fovea broadly divided into a small anterior and a slightly larger posterior section. Middle tibiae not spinose.

*Description of plesiotype male.*—Length 3.0 mm.; LFW 2.1 mm. Black; head and thorax with very weak coppery reflections; apical third of mandibles testaceous, the teeth rufous; scape fuscous, flagellum light ferruginous; legs dark brown, except tarsi testaceous; wings subhyaline. Third antennal segment barely visible; fourth segment 1.5 × as long as wide. Antennal scrobes strongly carinate. WH 1.02 × LH; WF 1.3 × HE; OOL .90 × WOT. Front strongly alutaceous although somewhat shining, punctures small, separated by 2–3 × their own diameters. Thoracic dorsum less strongly alutaceous and more sparsely punctate than front; pronotal disc short, strongly margined anteriorly and laterally, its posterior margin paralleled by a strong groove. Propodeal disc 1.4 × as wide as long, 5-carinate; lower mesopleural fovea divided by a narrow ridge.

*Remarks.*—The two males are very similar in every respect, but the second female is larger than the plesiallotype (LFW 2.4 mm.) and has a more strongly punctate and narrow front (WF and HE subequal); in this specimen the fore wings are much less broadly banded, in fact merely spotted in the submedian cell and around the radial vein. This species is a perfectly typical member of the *Columbianus* Species-group, closely similar to *columbianus* and to the Floridian *grandis* and probably derived from one of those species. It differs from those species in its small size, in the dark legs and more heavily banded wings of the female, and in having WOT exceeding OOL in the male.

#### Genus *Epyris* Westwood

This large genus is evidently poorly represented in the West Indies. I described two species in my 1964 Synopsis, and in 1966 (Evans, 1966b) I added one more, all from the Greater Antilles. The material now at hand includes additional material of two of these but no new species.

*Epyris manni* Evans

This species was described from females from Haiti and Puerto Rico. H. F. Howden took a male at Good Hope, near Falmouth, JAMAICA, 22 August 1966 [CNC], and a description of this specimen will be included in a revision now in press. Another male, more recently received, is from CUBA: Lomas de Soroa, Pinar del Rio, April 1964 (Alayo & Garcia) [ACC]. This specimen is larger than the Jamaica male (LFW 2.5 mm.) and has the legs bright rufotestaceous beyond the coxae, but it is otherwise very similar.

*Epyris cubanus* Evans

This species has been known from two females from Oriente Province, Cuba. New material includes specimens of both sexes from Oriente and Las Villas Provinces, CUBA: 1 ♀, La Gran Piedra, Oriente, June 1967 (P. Alayo); 1 ♂, Versalles, Santiago de Cuba, Oriente, March 1968 (no collector given); 1 ♂, Trinidad, Las Villas, June 1967 (P. Alayo) [all ACC]. The male from Oriente Province is designated *plesiallotype* and is described below. I am also now able to report this species from the U. S. Virgin Islands: ST. JOHN: 2 ♀♀, Coral Harbor, 12 Feb. 1969 (H. Evans) and ST. THOMAS: 1 ♀, Red Hook, 18 Feb. 1969 (H. Evans) [MCZ]. These three females are so similar to Cuban specimens that there seems no question that they are conspecific.

*Description of plesiallotype male.*—Length 1.8 mm.; LFW 1.7 mm. Black; antennae wholly dark brown; legs dark brown except front tibiae and all tarsi testaceous; wings subhyaline. Third antennal segment subequal to second segment, slightly longer than wide; segment eleven twice as long as wide. WH .93 × LH; WF 1.1 × HE; front angle of ocellar triangle slightly exceeding a right angle, OOL 1.1 × WOT. Front and thoracic dorsum alutaceous although somewhat shining, obscurely punctate; pronotum short, 1.7 × as wide as long; notauli complete, linear; scutellar pits very small, separated medially by nearly 4 × their own greatest diameter. Propodeum elongate, disc 1.15 × as wide as long; median area with delicate reticulations and several short basal carinae; median carina complete; posterior, lateral parts of disc shining, transversely striolate. Mesopleurum alutaceous, the pit strong, lower fovea ill-defined. Transverse median vein of fore wing evenly arched. Mandibles with a strong apical tooth above which are several small teeth in a receding cutting edge; median lobe of clypeus protuberant, narrowly rounded.

*Remarks.*—The male from Las Villas Province is smaller (LFW 1.4 mm.) and has the median carina of the propodeum obsolete on the posterior third, but it is otherwise very similar. These males run to *californicus* in my key to North American species, differing from that species only in minor details, principally in the minute scutellar pits. The female is also very similar to *californicus* except for the very dif-

ferent coloration, and I would assume that *cubanus* is derived from a stock of that or a closely related species that reached Cuba via Florida.

Genus **Bakeriella** Kieffer

This genus has not previously been reported from the West Indies; the majority of species occur in Central America and northern South America.

**Bakeriella floridana** Evans

This species was described from a female and 4 males from extreme southern Florida. A female from Good Hope, JAMAICA, taken on 11 Aug. 1966 by H. F. Howden [CNC] differs from the allotype in only three particulars: the antennal flagellum is very slightly more compact and is dusky ferruginous rather than pale castaneous, and the ocellar triangle is more compact, OOL being fully twice WOT. Characters such as these are not usually considered of specific value in this complex, and unless further collecting demonstrates otherwise I shall consider the Jamaica female conspecific with *floridana*.

Genus **Holepyris** Kieffer

This difficult genus has had no modern revision. All the West Indian specimens I have seen (save those from Jamaica) may well be conspecific, and I tentatively place them in Ashmead's *incertus*, described from St. Vincent and later recorded from Dominica (Evans, 1969a). Kieffer described *H. gracilis* from Cayamas, Cuba, and this is of similar size and coloration, but is said to have an impressed line preceding the posterior margin of the pronotum and to have the propodeum "almost smooth" behind. This is not strictly true of any of the specimens before me, but some variation is evident in these features, and it seems possible that *gracilis* will prove to be a synonym of *incertus*, which I interpret as being widely distributed in the West Indies. A pair from Jamaica is quite unlike any other *Holepyris* known to me, and is described below as new.

**Holepyris incertus** (Ashmead)  
(Fig. 2)

New material assigned to this species is as follows: CUBA: 1 ♀, Versailles, Santiago de Cuba, Oriente, March 1968 (no collector given) [ACC]; ST. JOHN (U. S. VIRGIN ISLANDS): 1 ♀, Coral Harbor, 23 Feb. 1967 (H. Evans) [MCZ]; ST. CROIX: 29 ♀♀, 1 ♂, East Point, Feb. 1967 and 1969 (H. Evans) [MCZ, USNM]; ST. THOMAS: 2 ♀♀, Red Hook, 18 Feb. 1969 (H. Evans) [MCZ].

Some variation is evident among the females, and it is conceivable that more than one species may be represented. The female from St. John, in particular, has a rather short head (WH .85 × LII) and nar-



row front (WF  $1.2 \times$  HE) as well as wholly rufo-testaceous legs, including the coxae. In the remaining specimens WH varies from .80 to  $.84 \times$  LH, WF from  $1.3$  to  $1.4 \times$  HE, the legs from mostly testaceous (but with dark coxae) to mostly fuscous. In the series as a whole, LFW varies from  $1.4$  to  $2.1$ , the Cuban specimen being the smallest, but otherwise very similar to the series from St. Croix.

**Holepyris vison**, n. sp.

(Fig. 3)

*Holotype*.—♀, JAMAICA: Hardwar Gap, 4000 feet, 13 July 1966 (Howden and Becker) [CNC]. *Allotype*.—♂, same data [CNC].

*Description of type female*.—Length 3.5 mm.; LFW 2.4 mm. Head and thorax black; abdomen dark castaneous, apical fourth rufo-testaceous; mandibles ferruginous; apical margin of clypeus, antennal lobes of front, and first two antennal segments light brown, remainder of antenna rufo-testaceous, dusky on upper surface; legs testaceous except all coxae and front and hind femora suffused with brown; wings subhyaline. Clypeus large, the rounded median lobe slightly exceeding the lateral lobes, median carina arched in profile. Antennae arising well below bottoms of eyes, scrobes not at all carinate; third segment shorter than two or four, slightly longer than wide; segment eleven  $1.3 \times$  as long as wide. Head unusually long, nearly parallel-sided, WH only  $.62 \times$  LH; eyes not protuberant, with a few rather long hairs; WF  $1.2 \times$  HE; distance from eye tops to vertex crest about  $1.5 \times$  HE; ocelli in an acute triangle, OOL  $2.5 \times$  WOT. Occipital carina complete. Front alutaceous, somewhat shining, with minute, widely spaced punctures. Pronotal disc  $1.4 \times$  as wide as its median length, margined anteriorly with a rather thick ridge which is reduced at the midline, posterior margin paralleled by a series of small foveae. Parapsidal furrows complete but notauli present on anterior half only; scutellar groove about  $3 \times$  as wide as its median length. Propodeal disc unusually long and slender,  $1.6 \times$  as long as wide, the sides slightly convergent posteriorly; median carina complete, disc with two other carinae which extend about half its length, disc otherwise irregularly transversely striate. Front femora flat, about twice as long as wide; middle tibiae not at all spinose.

*Description of allotype male*.—Length 2.6 mm.; LFW 2.4 mm. Head and thorax black; abdomen dark castaneous; mandibles and palpi testaceous; antennae dark brown except basal half of scape paler; legs bright testaceous except trochanters nearly white, tarsi dusky; wings subhyaline. Median lobe of clypeus subangulate, the tip rounded, lateral lobes nearly as long but much broader, gently rounded except subangulate at their mesal margin. Antennae very long and slender, first four segments in a ratio of about 18:13:18:16, segment three  $3.5 \times$  as long as wide, segment eleven  $2.8 \times$  as long as wide; flagellar pubescence dark, semierect, setulae about half as long as width of flagellum. WH  $.96 \times$  LH; eyes slightly protuberant, weakly hairy; sides of head convergent behind eyes, vertex broadly rounded, distance from eye tops to vertex crest much less than eye height; WF  $1.2 \times$  HE; ocelli in an obtuse triangle, OOL  $1.05 \times$  WOT. Occipital carina complete. Front strongly alutaceous, obscurely punctate. Pronotum also alutaceous, obscurely punctate, with a strong ridge margining the disc anteriorly, posterior margin paralleled by a row of punctures. Notauli distinct on anterior half

of mesoscutum; propodeal disc  $1.1 \times$  as long as wide, features as in female except lateral discal carinae extending about .7 length of disc.

*Remarks.*—Both female and male have many unusual features, and the sexes differ greatly in head shape and length of the propodeum. However, sexual dimorphism is great in this genus, and it seems to me probable that these are male and female of one species. The name *vison* (mink) was suggested by the very elongate form of the female.

Subfamily BETHYLINAE

Genus *Parasierola* Cameron

These are among the most commonly collected bethylids in the West Indies. The material before me includes six species, two of them apparently new. Eight species are now known from the West Indies.

KEY TO *Parasierola* IN GREATER ANTILLES AND VIRGIN ISLANDS

FEMALES

1. Front angle of ocellar triangle much less than a right angle, OOL at least  $2.5 \times$  WOT; propodeum without a transverse carina margining the disc behind ..... **rivularis** Evans  
 Front angle of ocellar triangle exceeding a right angle, OOL at most slightly exceeding WOT; propodeum with a transverse carina margining the disc (often incomplete medially) ..... 2
2. Eyes densely covered with short hairs; WF only about  $.77 \times$  HE (fig. 5); front femora greatly enlarged, only  $1.5-1.6 \times$  as long as wide; clypeal carina extremely thin and high ..... **ciliata**, n. sp.  
 Eyes glabrous or with sparse, short hairs; WF at least  $.80 \times$  HE, usually greater (figs. 4, 6); front femora somewhat incrassate,  $1.8-2.2 \times$  as long as wide ..... 3
3. Abdomen rufo-testaceous, with a series of large black dorsal spots, most of them subtriangular, the spots often partially confluent but at least not covering the venter; clypeal carina a mere polished streak, little elevated ..... **spilogaster**, n. sp.  
 Abdomen castaneous to piceous, above and below; clypeus with a sharp, elevated median ridge ..... 4
4. LFW  $1.8-2.2$  mm; WH and LH subequal; antennae elongate, third segment about twice as long as wide; legs wholly rufo-testaceous ... **luteipes** Kieffer  
 LFW  $1.3-1.8$  mm; LH much exceeding WH; antennae compact, third segment slightly if at all longer than wide ..... 5
5. Coxae and femora fuscous; WF exceeding HE in most specimens ..... **nigrifemur** (Ashmead)  
 Coxae and femora testaceous (front femora sometimes dark along anterior margin); front narrow, WF  $.85-1.00 \times$  HE ..... **wirthi** Evans

MALES

1. Coxae and femora wholly dark brown ..... **nigrifemur** (Ashmead)  
 Coxae and femora mostly testaceous ..... 2
2. Head about as wide as high; LFW about 1.9 mm ..... **luteipes** Kieffer  
 Head much higher than wide; LFW  $1.2-1.6$  mm ..... **wirthi** Evans

***Parasierola spilogaster*, n. sp.**

(Fig. 6)

*Holotype*.—♀, CUBA: Santiago de las Vegas, Habana, April 1967 (no collector stated) [ACC]. *Paratypes*.—CUBA: 1 ♀, same data as type [ACC]; 1 ♀, C. Montero Cruces, Las Villas, Dec. 1967 (P. Alayo) [ACC]; 7 ♀♀, Laguna Ariguanabo, Habana, May 1967 (P. Alayo) [ACC, MCZ, USNM].

*Description of type*.—Length 3.0 mm.; LFW 2.0 mm. Head and thorax black; abdomen bright rufo-testaceous except marked with black as follows: central part of tergite I, large, subtriangular spots on tergites II–VI, decreasing in size posteriorly, sting palps and most of apical sternite; mandibles and basal two antennal segments testaceous, remainder of antenna dark brown; legs wholly bright rufo-testaceous; wings hyaline, with dark brown veins, prostigma, and stigma. Clypeus with the median lobe narrowly rounded, the tip subangulate, the median carina barely arched in profile; eyes very weakly short-haired; antennal scrobes not at all carinate. Antennae elongate, first four segments in a ratio of about 24:15:15:14, segment three  $2.5 \times$  as long as wide, segment eleven  $1.5 \times$  as long as wide. WH  $1.05 \times$  LH; WF and HE subequal; OOL and WOT subequal; ocelli in an obtuse triangle, posterior ocelli very close to vertex crest. Front and thoracic dorsum uniformly alutaceous, obscurely punctate; posterior margin of pronotum sinuate medially; notauli absent. Propodeal disc  $1.6 \times$  as wide as long, with a complete transverse carina behind, the disc wholly alutaceous. Front femora  $2.1 \times$  as long as wide.

*Variation*.—LFW varies from 1.7 to 2.1 mm. Little variation is evident in sculpture or standard measurements, and most specimens are similar to the type in color. However, several have the apical tergite mostly infuscated, and one specimen has the dorsal spots so large as to be mostly confluent, confining the rufo-testaceous coloration largely to the sides and venter.

***Parasierola luteipes* Kieffer**

(Fig. 4)

I have not seen the type of this species, described from a female from Cayamas, Cuba, but six females before me agree very well with Kieffer's description, and one male from the same locality also undoubtedly belongs here. These specimens are all from CUBA: Santiago de las Vegas, Habana, collected in January, February, and April, 1967, by P. Alayo and by G. Aqueros [ACC, MCZ]. Both sexes are black with wholly rufo-testaceous legs as well as the mandibles and scape of this color; LFW varies from 1.8 to 2.2 mm. in the females and is 1.8 mm. in the single male. In both sexes WH and LH are subequal and WF and HE subequal; the ocellar triangle is broad and flat, WOT slightly exceeding OOL; the head and thorax are alutaceous, obscurely punctate; and the propodeal disc is margined behind by a transverse carina which is broadly interrupted medially.

***Parasierola nigrifemur*** (Ashmead)

I have collected this widely distributed species on ST. CROIX (East Point) and ST. JOHN (Coral Harbor) in February, 1967 and 1969, and I have seen specimens from CUBA, from the provinces of Pinar del Rio, Habana, and Las Villas. I have also collected it on Antigua and Dominica and I have seen specimens from Puerto Rico and St. Vincent. This is a small species (LFW 1.0–1.6 mm.) with dark femora and mostly dark mandibles. Ogloblin (1960) has provided a detailed description.

***Parasierola wirthi*** Evans

This is a common species in coastal localities on Dominica, and when I described it I suggested that it might prove to be widely distributed. Specimens collected in the Virgin Islands fall within the range of variation expressed for *wirthi* and seem unquestionably conspecific. The only noteworthy differences seem to be that Virgin Island females have a somewhat more strongly punctate front and higher and more arching clypeal carina; the front femora are consistently very robust, averaging about  $1.8 \times$  as long as wide. These specimens are from ST. CROIX: 14 ♀♀, 11 ♂♂, East Point, 13–17 Feb. 1967 (H. Evans) and from ST. JOHN: 1 ♀, Coral Harbor, 23 Feb. 1967 (H. Evans); 1 ♀, Leinster Bay, 13 Feb. 1969 (H. Evans) [MCZ].

***Parasierola rivularis*** Evans

This species was also described from localities near the coast on Dominica, but from only two specimens. A female from JAMAICA: Hardwar Gap, 23 July 1966 (Howden and Becker) [CNC] is assigned here tentatively. It is larger than either of the Dominica females (LFW 3.0 mm.) and has a less elongate head (WH .93  $\times$  LH), although all other features of the head, including mandibles and antennae, are very much like those of the type and paratype; OOL is  $2.8 \times$  WOT; the legs are wholly rufo-testaceous and the front femora are very slender, about  $2.5 \times$  as long as wide. The propodeum lacks a transverse carina, as in the Dominica females.

***Parasierola ciliata***, n. sp.

(Fig. 5)

*Holotype*.—♀, JAMAICA: Good Hope [near Falmouth], 22 Aug. 1966 (H. F. Howden) [CNC]. *Paratype*.—♀, Same data except collected 8 Aug. 1966 [MCZ].

*Description of type*.—Length 2.1 mm.; LFW 1.7 mm. Head and thorax black; abdomen dark castaneous; mandibles and most of clypeus rufo-testaceous, antennae also of this color but somewhat dusky apically; legs bright rufo-testaceous except middle and hind coxae whitish; wings hyaline, veins brownish, stigma and

prostigma dark brown. Clypeus, in frontal view, acutely angulate, in lateral view seen to have a thin, arching median crista, this continued on up the lower third of the front as a polished streak; antennal scrobes not carinate; eyes densely covered with short hairs. Antennae of moderate length, segments three and eleven both slightly longer than wide. WH  $.90 \times$  LH; front very narrow, WF  $.77 \times$  HE; ocelli in a flat triangle, posterior ocelli very close to the sharp vertex crest, OOL  $.85 \times$  WOT. Front alutaceous, somewhat shining, punctures numerous but rather weak. Thoracic dorsum moderately shining, weakly punctate; notauli absent; propodeal disc  $1.7 \times$  as wide as long, margined behind by a transverse carina which is interrupted medially; disc with the usual elevated, polished median streak. Front femora extremely robust,  $1.6 \times$  as long as wide.

*Variation.*—The paratype is slightly larger (LFW 2.0 mm.) and has the front femora even more robust ( $1.5 \times$  as long as wide). Otherwise it is very similar to the type.

#### Genus *Goniozus* Foerster

This genus is represented by numerous species in the West Indies, although these are less commonly collected than members of the genus *Parasierola*. Six species are treated here, two of them new; three other species are known from Dominica, one more from St. Vincent and Grenada, making a total of 10 known West Indian species.

#### KEY TO *Goniozus* IN GREATER ANTILLES AND VIRGIN ISLANDS

##### FEMALES

1. Head large, considerably wider than thorax; head somewhat quadrate, with prominent posterior angles, distance from eye tops to vertex crest equal to or exceeding eye height (fig. 8) ..... 2  
 Head smaller, only slightly if at all wider than thorax, more or less rounded behind eyes, or if somewhat quadrate the head unusually slender (figs. 7, 9) ..... 3
2. Length about 2.7 mm; mandibles dark brown, robust; propodeal disc without a transverse carina ..... **megacephalus** Ashmead  
 Length about 1.5 mm; mandibles testaceous, slender; propodeal disc margined behind by a weak transverse carina ..... **grandiceps** (Kieffer)
3. Propodeal disc sloping smoothly behind, with no evidence of a transverse carina ..... 4  
 Propodeal disc with a well-defined transverse carina, often interrupted at the midline ..... 5
4. Head unusually long and slender (WH  $.68 \times$  LH) (fig. 9); LFW 1.1 mm; abdomen wholly fuscous, strongly depressed ..... **virginialis**, n. sp.  
 Head not unusually long and slender (WH  $.81-.92 \times$  LH); LFW 1.3–1.7 mm; abdomen light brown to ferruginous basally, contrasting with the darker apical part ..... **cariborum** Evans
5. Coxae and femora brown; front femora slightly incrassate, about  $1.95 \times$  as long as wide; WF slightly less than HE ..... **alayoellus**, n. sp.  
 Legs wholly bright testaceous; front femora strongly incrassate, about  $1.6 \times$  as long as wide; WF slightly exceeding HE ..... **crassifemur** Evans



## MALES

1. Propodeal disc margined behind by a transverse carina; LFW 1.7 mm; wing veins almost colorless ..... ? **crassifemur** Evans  
Propodeal disc without a transverse carina behind; LFW 1.0–1.4 mm; wing veins light to dark brown ..... 2
2. Head slender, WH only  $.81 \times$  LH; antennal scrobes not margined; coxae and femora dark brown ..... **virginalis**, n. sp.  
Head less slender, WH  $.86-.96 \times$  LH; scrobes weakly margined; most specimens with legs wholly testaceous ..... **cariborum** Evans

**Goniozus megacephalus** Ashmead

(Fig. 8)

This species was described from Key West, Florida, and has been known only from the type female. Two Cuban females agree well with Ashmead's description and with his type specimen, which is in rather poor condition. Both specimens are about 2.7 mm. long, LFW 1.8 mm.; WH is  $.82-.83 \times$  LH, OOL  $1.8-2.0 \times$  WOT. Both specimens are from Laguna Ariguanabo, Habana, collected by P. Alayo in May, 1967 [ACC].

**Goniozus grandiceps** (Kieffer)

I have not seen this species, described from a female from Habana, Cuba. The head shape is evidently similar to that of *megacephalus*, but judging from Kieffer's description there are several differences. It is a smaller species (length 1.5 mm.), with the mandibles testaceous rather than dark brown and evidently much more slender than in *megacephalus*; the propodeal disc is said to be weakly margined behind rather than unmargined as in *megacephalus*. I question Kieffer's statement that the antennae have only 12 segments.

**Goniozus crassifemur** Evans

A paratype of this species was described from East Point, St. Croix; the holotype is from Dominica. I have seen no additional females, but a male from Cuba has most of the features I would expect of the male of this species. However, pending the discovery of females from Cuba it can be assigned here only tentatively. This specimen is from El Veral, Guanchacabibes, Pinar del Rio, collected in October 1967 [ACC].

This male is 2.0 mm. long, LFW 1.7 mm. The mandibles, antennae, and legs are testaceous except that the apex of the antennae and the coxae and femora are weakly suffused with brown; the wing veins are lightly pigmented and the spur arising from the basal vein long and slightly curved, as in the female *crassifemur*. WH/LH is  $.88$ , WF and HE subequal; the ocelli are in an obtuse triangle, WOT exceeding

OOL slightly. The transverse carina of the propodeum is strong and complete.

**Goniozus cariborum** Evans

I described this species from a single female from Dominica. A series of both sexes from St. John and from Cuba appear to me to be conspecific with the *cariborum* type. The data on these specimens are as follows: CUBA: 2 ♀♀, La Gran Piedra, Oriente, June 1967 (P. Alayo) [ACC]; 1 ♂, Versalles, Santiago de Cuba, Oriente, March 1968 [ACC]; ST. JOHN: 6 ♀♀, 7 ♂♂, Maho Bay, 20–24 Feb. 1967 (H. Evans) [MCZ, USNM]; 1 ♀, Cinnamon Bay, 10 Feb. 1969 (H. Evans) [MCZ].

All of these females have the legs entirely testaceous and all have the basal half of the abdomen brown to ferruginous, contrasting with the darker apical half. LFW varies from 1.3 to 1.7 mm., and all are very similar to the type with respect to the WF/HE ratio, OOL/WOT ratio, and the form of the ocellar triangle. The females from St. John agree with the type in head shape (WH .89–.92 × LH), but the two Cuban females have a more elongate head (WH .81 × LH). One Cuban female has the front quite distinctly punctate, as in the type, but in the other eight females it is obscurely punctate. The front femora vary considerably in shape (1.8–2.1 × as long as wide).

The males from St. John are similar to the females in color but average somewhat smaller (LFW 1.0–1.4 mm.). WH/LH varies from .92 to .96, WF/HE from 1.0 to 1.1, OOL/WOT from 1.1 to 1.2. The Cuban male has the coxae and femora dark brown, the base of the abdomen barely lighter than the apical part; in this specimen the head is rather elongate (WH .86 × LH) as it is in the Cuban females.

**Goniozus virginalis**, n. sp.

(Fig. 9)

*Holotype*.—♀, ST. JOHN, U. S. VIRGIN ISLANDS: Coral Harbor, 23 Feb. 1967 (H. Evans) [MCZ]. *Allotype*.—♂, ST. CROIX: East Point, 13–17 Feb. 1967 (Evans) [MCZ]. *Paratypes*.—1 ♀, same data as type except 12 Feb. 1969 [USNM]; 1 ♀, Same data as allotype except 7 Feb. 1969 [USNM].

*Description of type female*.—Length 1.7 mm.; LFW 1.1 mm. Head and thorax very dark brown, abdomen black; mandibles brown; antennae testaceous, infuscated on apical third; legs dark brown except tarsi testaceous; wings hyaline, veins and stigma brown. Clypeus angularly protuberant, with a high, arching median ridge which continues up front as a polished streak for only a short distance, ending opposite top of antennal scrobes, which are sharply margined but not carinate. Antennae short, segments 3–12 not longer than wide. Head long and slender, WH only .68 × LH; WF and HE subequal; eyes glabrous, small, non-protuberant, distance from eye tops to vertex crest subequal to HE; sides of head

subparallel behind eyes, then roundly convergent to a straight vertex; ocelli in an obtuse triangle close to the sharp vertex crest, OOL  $1.8 \times$  WOT. Front alutaceous, somewhat shining, punctures small and rather widely spaced. Pronotum strongly alutaceous, rather long; notauli represented by small foveae near the posterior margin of the scutum; propodeal disc with a strongly polished, rounded median elevation, with no evidence of a transverse carina. Front femora very thin, foliaceous, measuring  $1.8 \times$  as long as wide. Wings slender; spur arising from basal vein barely longer than wide. Abdomen strongly depressed.

*Description of allotype male.*—Length 1.3 mm.; LFW 1.0 mm. Coloration as in female; form of clypeus and clypeo-frontal carina as in that sex; scrobes not margined; eyes glabrous, slightly larger than in female. WH  $.81 \times$  LH; WF and HE subequal; sides of head more roundly convergent behind eyes than in female, distance from eye tops to vertex crest slightly less than eye height; ocelli in an obtuse triangle, OOL  $1.3 \times$  WOT. Antennae short, as in female; front alutaceous and sparsely punctate as in that sex; thoracic and propodeal characters also as described for female. Abdomen short, strongly depressed, somewhat bristly apically.

#### *Goniozus alayoellus*, n. sp.

*Holotype.*—♀, CUBA: Laquito, Marianao, Habana, April 1967 (P. Alayo) [ACC].

*Description of type.*—Length 2.2 mm.; LFW 1.7 mm. Body very dark brown, head nearly black; mandibles testaceous, antennae also of this color but infuscated on apical half; coxae and femora dark brown, middle and hind tibiae medium brown, front tibiae and all tarsi testaceous; wings hyaline, veins nearly colorless except along costal margin. Clypeus narrowly rounded except subangulate at the midline, median ridge high and arched, continued up front as a median streak for a short distance only; antennal scrobes sharply margined but not carinate; eyes large, glabrous. Antennae of moderate length, segment three  $1.5 \times$  as long as wide, segment eleven slightly longer than wide. Head subcircular in anterior view, although somewhat longer than wide, WH  $.92 \times$  LH; front narrow, WF only  $.92 \times$  HE; vertex rounded off a short distance above eye tops; ocelli in an obtuse triangle, OOL and WOT subequal. Front alutaceous, punctures distinct, separated by  $2-3 \times$  their own diameters. Pronotum alutaceous and with sparse, rather strong punctures; mesoscutum with a few punctures, the notauli absent; propodeal disc  $1.5 \times$  as wide as long, with a polished, elevated median streak, disc margined behind by a transverse carina which is complete although rather weak medially. Front femora slightly incrassate,  $1.95 \times$  as long as wide. Spur arising from basal vein as long as distance from its base to base of prostigma. Abdomen moderately depressed, apical sternite covered with short, erect bristles.

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## A REVIEW OF THE GENUS DELPHASTUS CASEY

(COLEOPTERA: COCCINELLIDAE)

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ABSTRACT—A summary of previous work on the genus is presented and tribal affinities indicated. Five new species are described and one species synonymized. A key to all known species is included along with a brief description of each. Male genitalia of most species are illustrated.

The genus *Delphastus* was erected by Casey (1899) for four species, one of which was a Horn species, three were LeConte species, and one Casey's. Champion (1913) described a new species from Guatemala and Mexico, erecting the genus *Lioscymnus* for it, and Nunenmacher (1937) added another *Delphastus* species from Argentina. Chapin (1940) reviewed the genera related to *Delphastus* and described two new *Delphastus* species from Puerto Rico and Panama. Five new *Delphastus* are described herein to bring the total known species to 12.

Chapin (1940) removed *Delphastus* and related genera from the tribe Oeneini but did not propose a new tribal name. Blackwelder (1945) placed *Delphastus* as well as *Catana* Chapin, *Pseudosmilia* Bréthes, and *Microweisea* Cockerell in the Serangiini. Pope (1962) removed *Pseudosmilia* and *Microweisea* and placed them in the African and Oriental tribe Pharini. The Serangiini differ from the Pharini in that the antennal club is composed of a single segment and the prosternum is strongly lobed in front, completely concealing the mouthparts in repose. The Pharini have two or more segments in the antennal club and the prosternum does not conceal the mouthparts.

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